

IN UTERO EXPOSURE TO PERSISTANT ORGANIC POLLUTANTS (POPS) IN GIRLS: RELATIONSHIPS TO GROWTH, PUBERTAL DEVELOPMENT AND REPRODUCTIVE SUCCESS: NEW DATA

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Background and Aims: POPs have been shown to affect the endocrine system, particularly during critical windows of development. We examined the effect of *in utero* exposure to two different classes of POPs, polyfluoroalkyl compounds (PFs) and brominated flame retardants (BFRs) on girls' childhood growth and pubertal development. The study of BFRs includes followup into the reproductive years.

Methods: The study of PFs is a nested case control study within the Avon Longitudinal Study of Parents and Children (ALSPAC). Serum samples collected during pregnancy from mothers of earlier-maturing girls (n=218) and later-maturing girls (n=230) were assayed for PFs by solid-phase extraction coupled to isotope dilution high-performance liquid chromatography-tandem mass spectrometry. The study of BFRs is a cohort study of Michigan residents who consumed contaminated meat and dairy products as a result of an industrial accident. Serum samples from women were assayed for BFRs by gas chromatography with electron capture detection. Their female offspring were followed prospectively (n=327).

Results: In the ALSPAC study PF concentrations were associated with more rapid postnatal growth. A 1-unit increase in log-transformed PFs was associated with a 0.02 increase in the rate of growth per month (weight-for-age SD score). Previously published work in this population found PFs associated with increased odds of earlier menarche (OR=1.3), however, this increase did not reach statistical significance (Christensen et al, 2011). The study of BFR previously found earlier pubertal development among girls with high exposure in utero and through breastfeeding (Blanck et al, 2000). Continued follow-up has revealed a dose-related increase in the risk of spontaneous abortion among these, now adult, women.

Conclusions: Exposure to POPs during critical periods of endocrine development may have substantial long-term consequences.

References:

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